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Tomita

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(54) **INFORMATION PROCESSING APPARATUS AND CONTROL METHOD OF THE INFORMATION PROCESSING APPARATUS**

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(52) **U.S. Cl.**
CPC ***H04N 1/00244*** (2013.01); ***H04N 1/00933*** (2013.01); *H04N 2201/0012* (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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(57) **ABSTRACT**

The present invention is directed to an information processing apparatus in which a waiting time for waiting image data in the information processing apparatus can be adjusted, as much as possible, to a time period during which the image data read by the image reading apparatus is acquired by the information processing apparatus through a file sharing system.

When the apparatus determines that an image reading setting which matches a setting registration name set to the PC by a user according to a registration operation of the image reading setting is applied, the PC changes the sharing condition of the shared file folder to an open state. Then, when the apparatus determines that the image reading setting is no longer applied or the image is not currently read, the PC changes the sharing condition of the shared file folder to a private state.

7 Claims, 12 Drawing Sheets

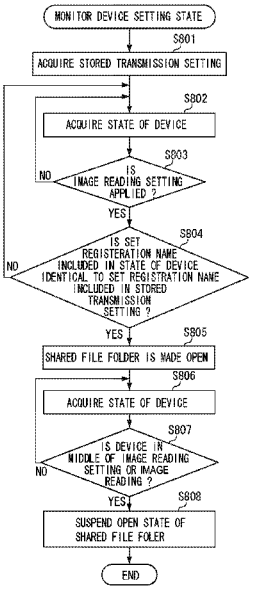
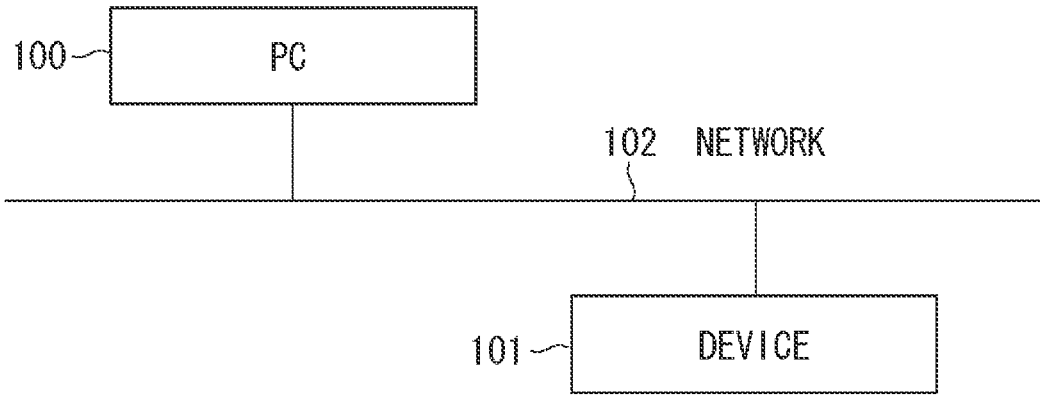


FIG. 1



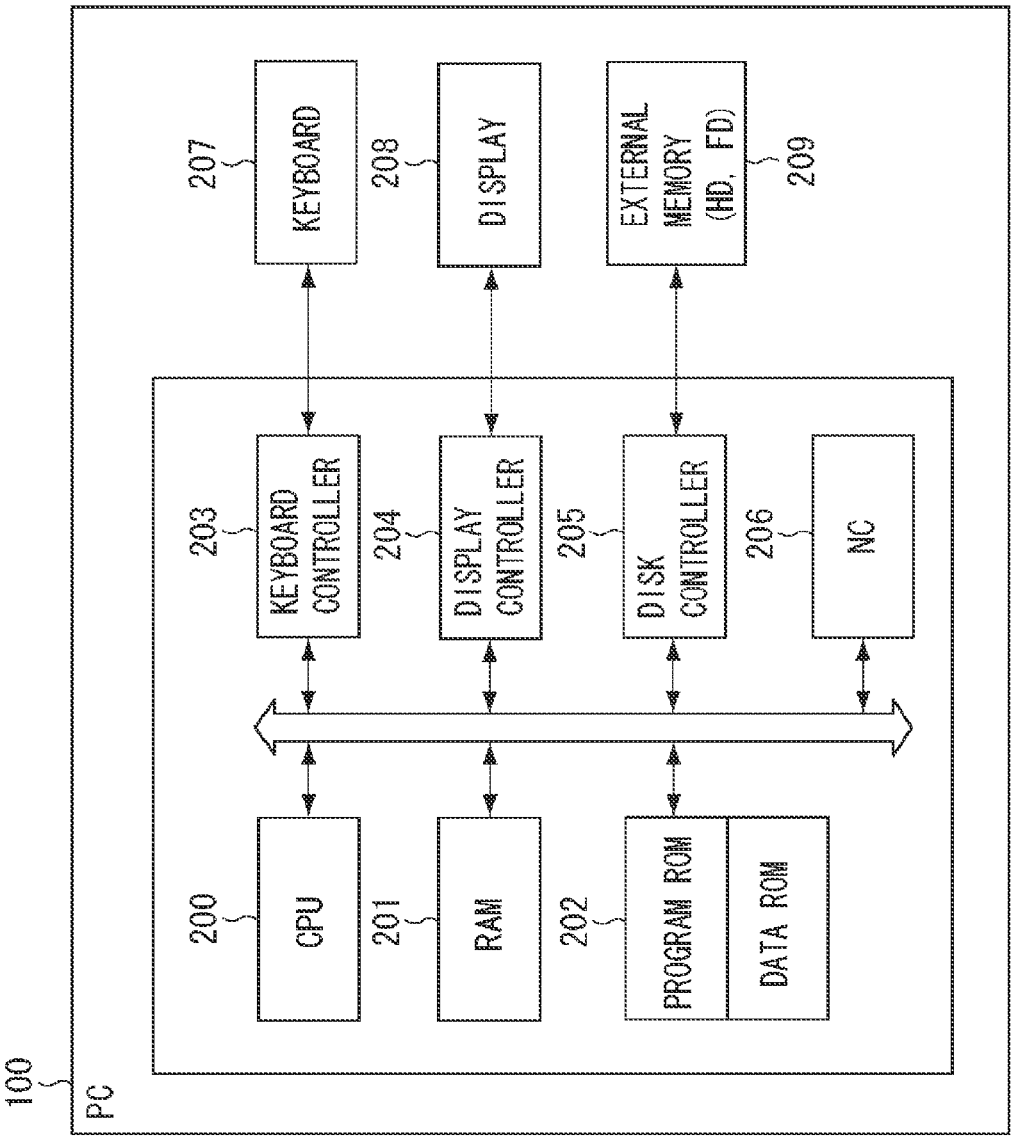

100
PC
200
CPU
201
RAM
202
PROGRAM ROM
DATA ROM
203
KEYBOARD CONTROLLER
204
DISPLAY CONTROLLER
205
DISK CONTROLLER
206
NC
207
KEYBOARD
208
DISPLAY
209
EXTERNAL MEMORY (HD, FD)

FIG. 2

FIG. 3

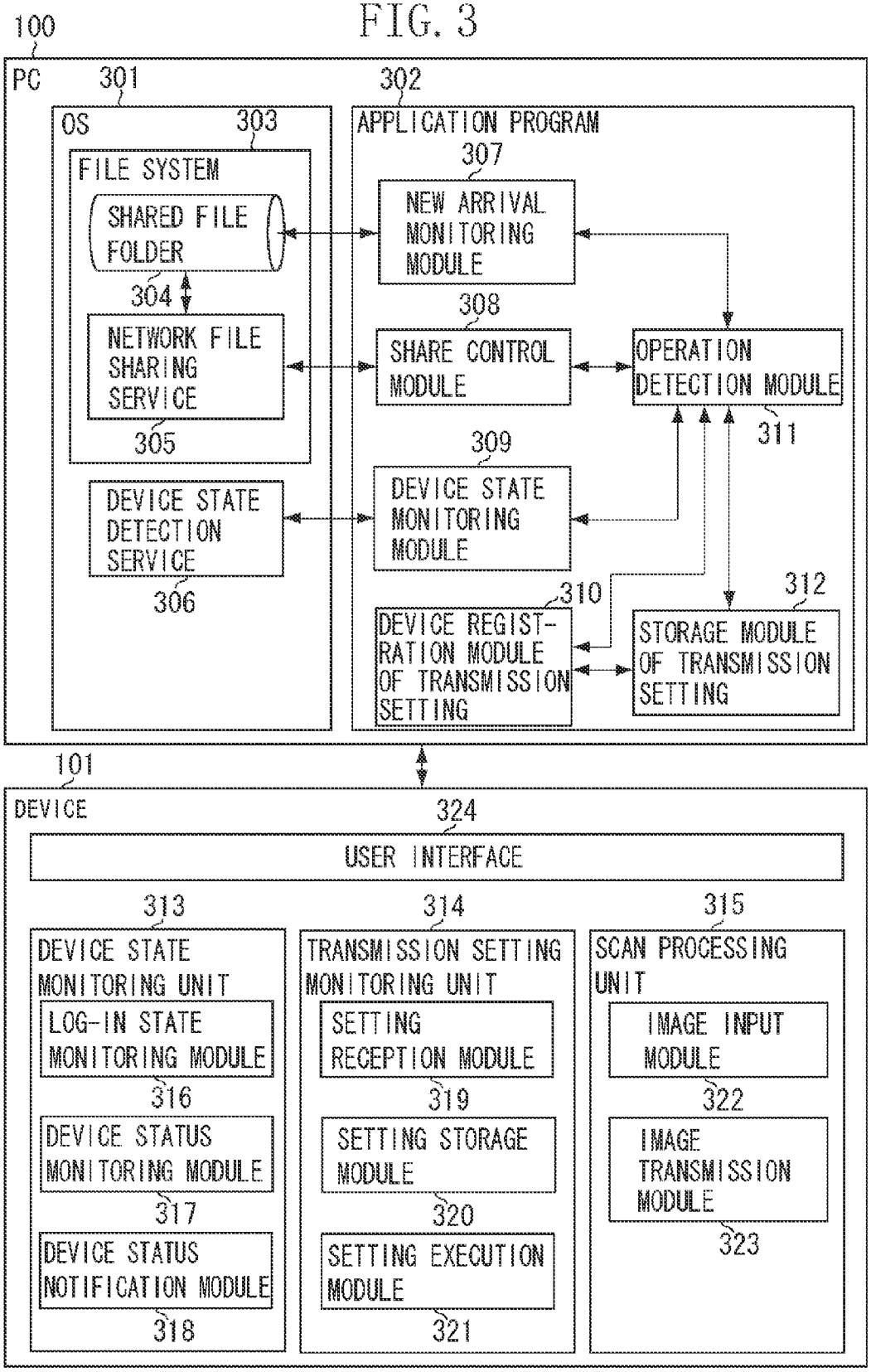

100
PC
301
OS
303
FILE SYSTEM
SHARED FILE FOLDER
304
NETWORK FILE SHARING SERVICE
305
DEVICE STATE DETECTION SERVICE
306
302
APPLICATION PROGRAM
307
NEW ARRIVAL MONITORING MODULE
308
SHARE CONTROL MODULE
OPERATION DETECTION MODULE
311
309
DEVICE STATE MONITORING MODULE
310
DEVICE REGIST-RATION MODULE OF TRANSMISSION SETTING
312
STORAGE MODULE OF TRANSMISSION SETTING
101
DEVICE
324
USER INTERFACE
313
DEVICE STATE MONITORING UNIT
LOG-IN STATE MONITORING MODULE
316
DEVICE STATUS MONITORING MODULE
317
DEVICE STATUS NOTIFICATION MODULE
318
314
TRANSMISSION SETTING MONITORING UNIT
SETTING RECEPTION MODULE
319
SETTING STORAGE MODULE
320
SETTING EXECUTION MODULE
321
315
SCAN PROCESSING UNIT
IMAGE INPUT MODULE
322
IMAGE TRANSMISSION MODULE
323

FIG. 4

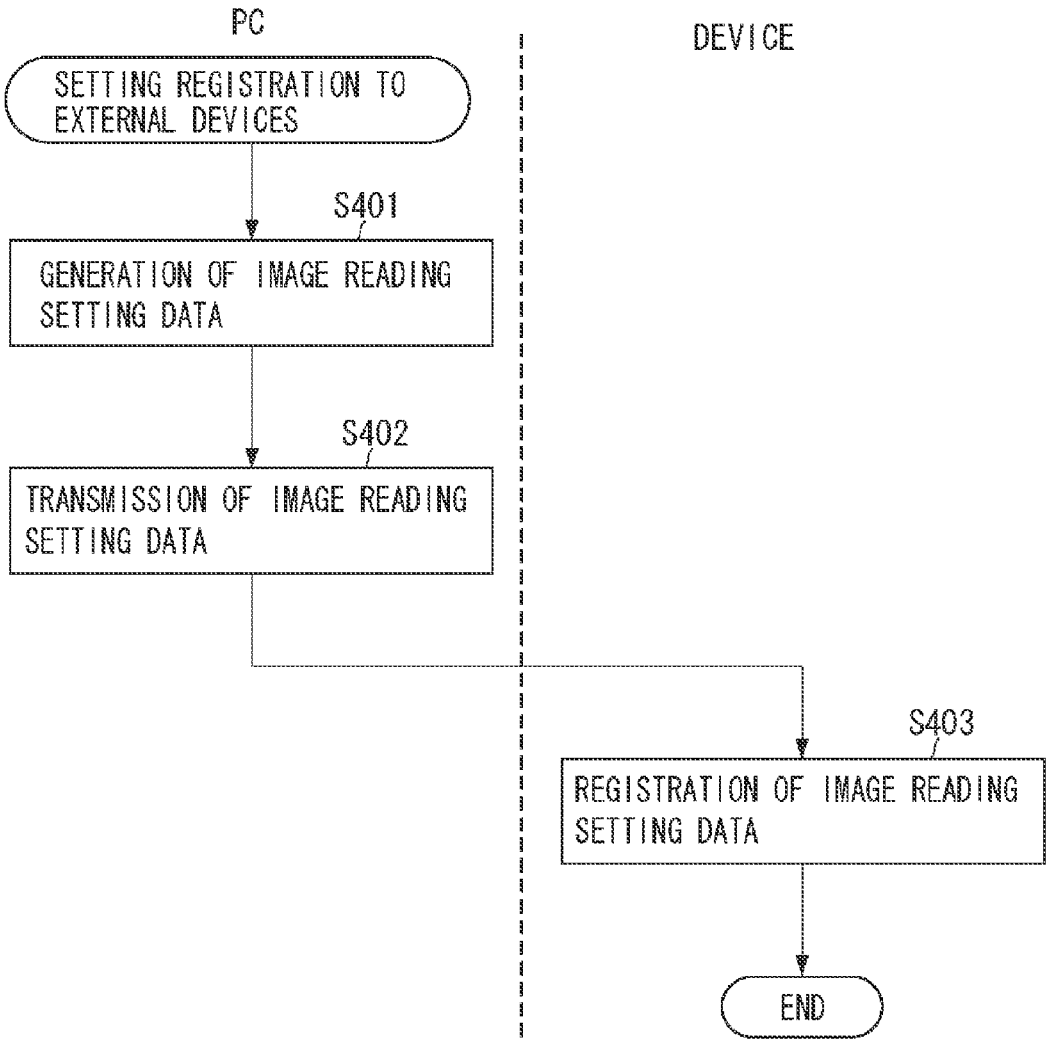

PC
DEVICE
SETTING REGISTRATION TO EXTERNAL DEVICES
S401
GENERATION OF IMAGE READING SETTING DATA
S402
TRANSMISSION OF IMAGE READING SETTING DATA
S403
REGISTRATION OF IMAGE READING SETTING DATA
END

FIG. 5

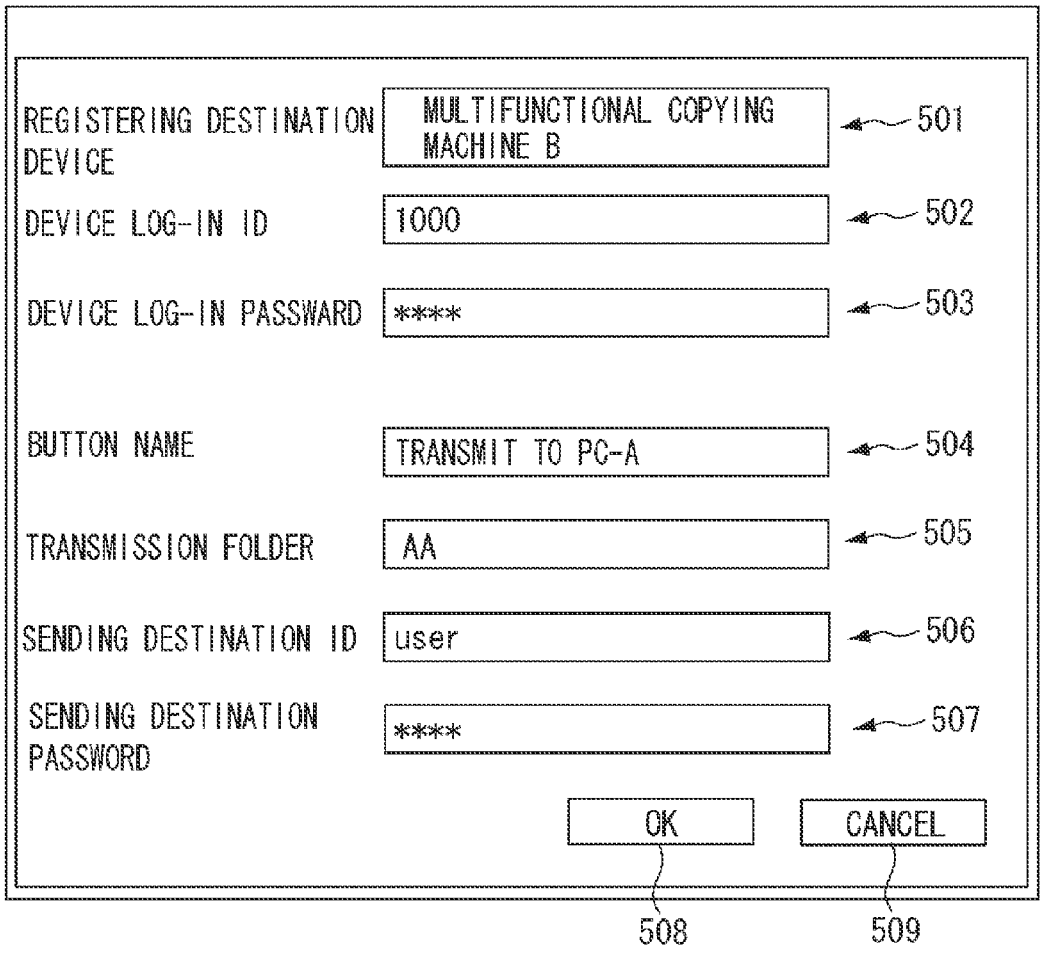

REGISTERING DESTINATION DEVICE
MULTIFUNCTIONAL COPYING MACHINE B
501
DEVICE LOG-IN ID
1000
502
DEVICE LOG-IN PASSWARD
****
503
BUTTON NAME
TRANSMIT TO PC-A
504
TRANSMISSION FOLDER
AA
505
SENDING DESTINATION ID
user
506
SENDING DESTINATION PASSWORD
****
507
OK
CANCEL
508
509

FIG. 6

600

IMAGE READING SETTING DATA		
BUTTON ID	001	601
DEVICE LOG-IN ID	1000	602
BUTTON NAME	TRANSMIT TO PC-A	603
SENDING DESTINATION	192.168.0.1	604
DESTINATION FOLDER	AA	605
SENDING DESTINATION USER ID	user	606
SENDING DESTINATION PASSWORD	pass	607

FIG. 7

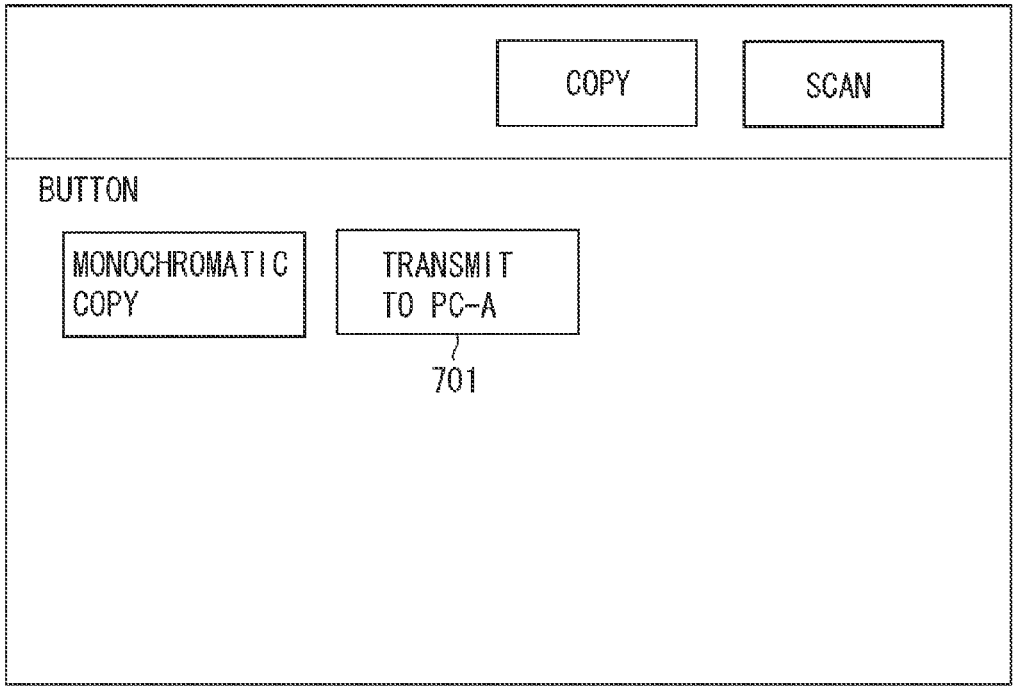


FIG. 8

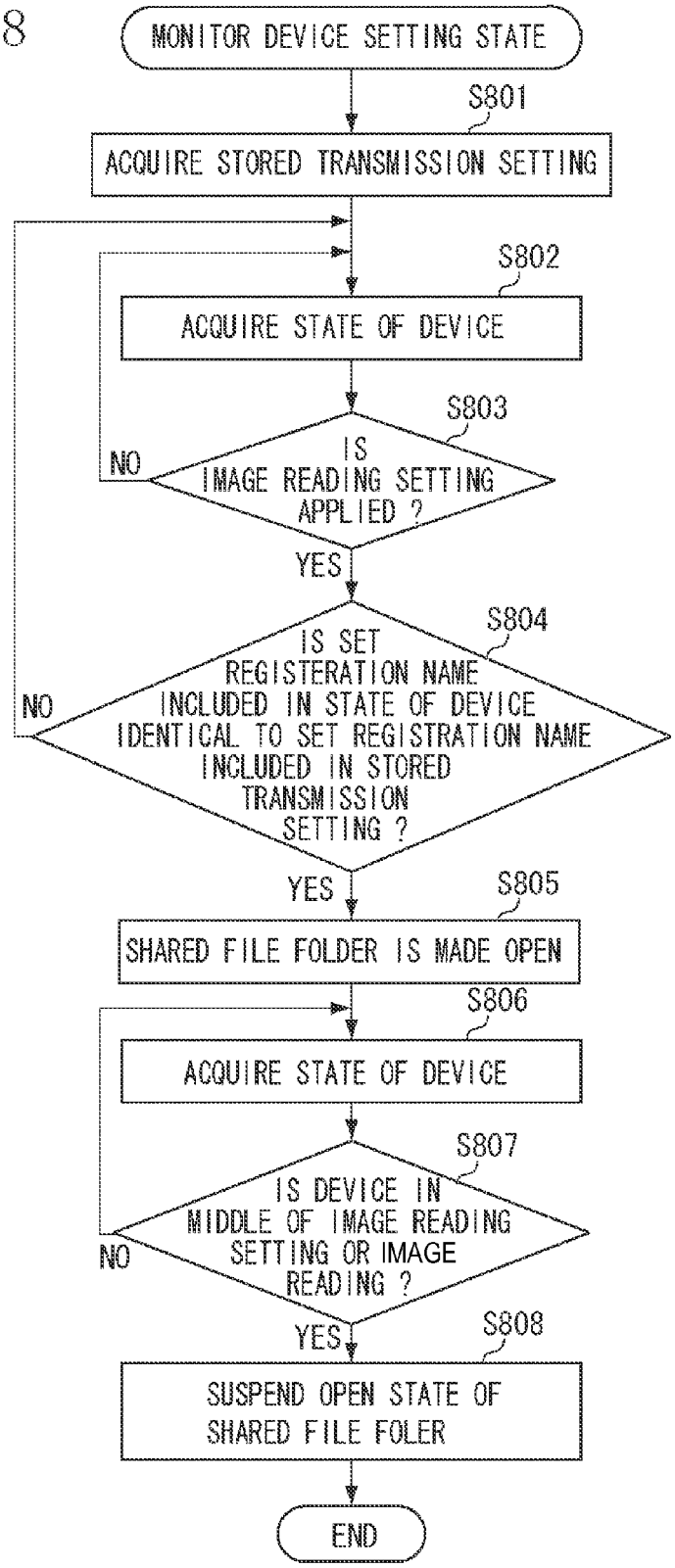

MONITOR DEVICE SETTING STATE
S801
ACQUIRE STORED TRANSMISSION SETTING
S802
ACQUIRE STATE OF DEVICE
S803
IS IMAGE READING SETTING APPLIED ?
NO
YES
S804
IS SET REGISTERATION NAME INCLUDED IN STATE OF DEVICE IDENTICAL TO SET REGISTRATION NAME INCLUDED IN STORED TRANSMISSION SETTING ?
NO
YES
S805
SHARED FILE FOLDER IS MADE OPEN
S806
ACQUIRE STATE OF DEVICE
S807
IS DEVICE IN MIDDLE OF IMAGE READING SETTING OR IMAGE READING ?
NO
YES
S808
SUSPEND OPEN STATE OF SHARED FILE FOLER
END

FIG. 9

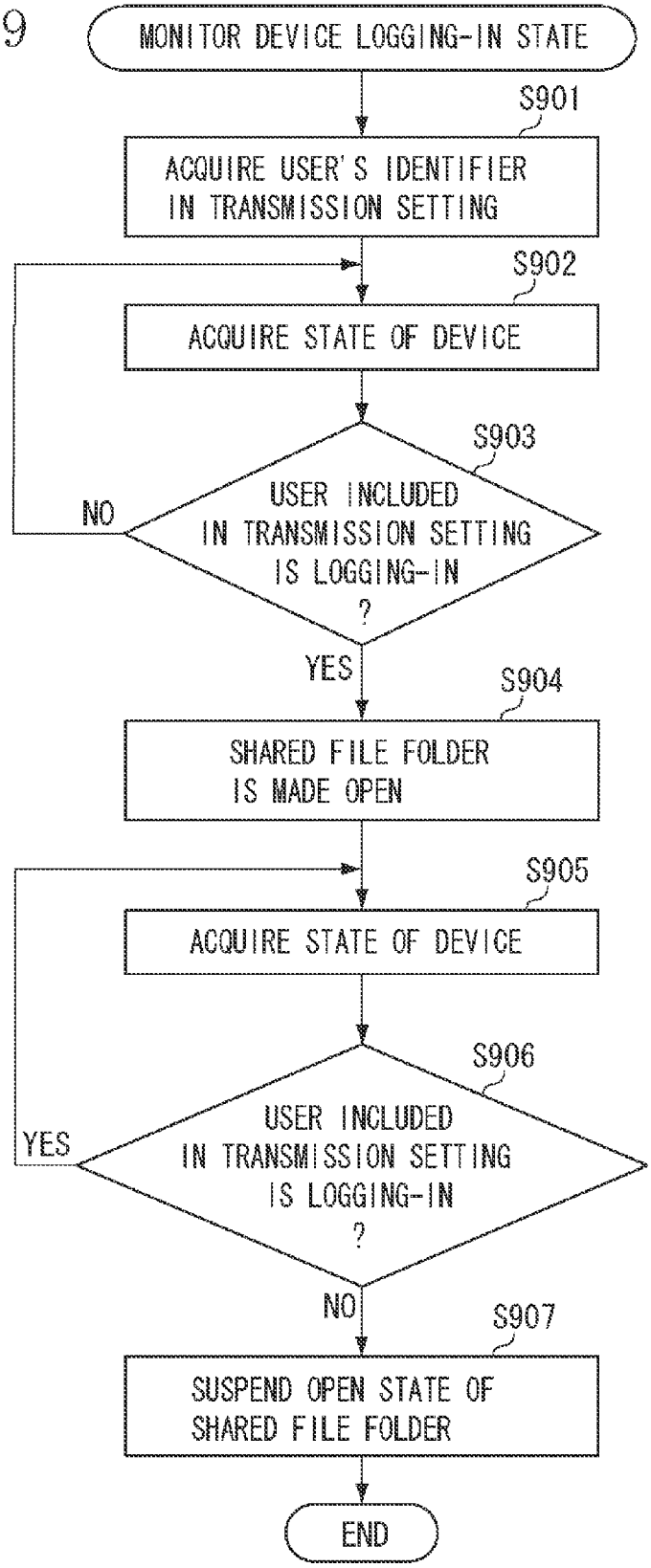

MONITOR DEVICE LOGGING-IN STATE
S901
ACQUIRE USER'S IDENTIFIER IN TRANSMISSION SETTING
S902
ACQUIRE STATE OF DEVICE
S903
USER INCLUDED IN TRANSMISSION SETTING IS LOGGING-IN ?
NO
YES
S904
SHARED FILE FOLDER IS MADE OPEN
S905
ACQUIRE STATE OF DEVICE
S906
USER INCLUDED IN TRANSMISSION SETTING IS LOGGING-IN ?
YES
NO
S907
SUSPEND OPEN STATE OF SHARED FILE FOLDER
END

FIG. 10

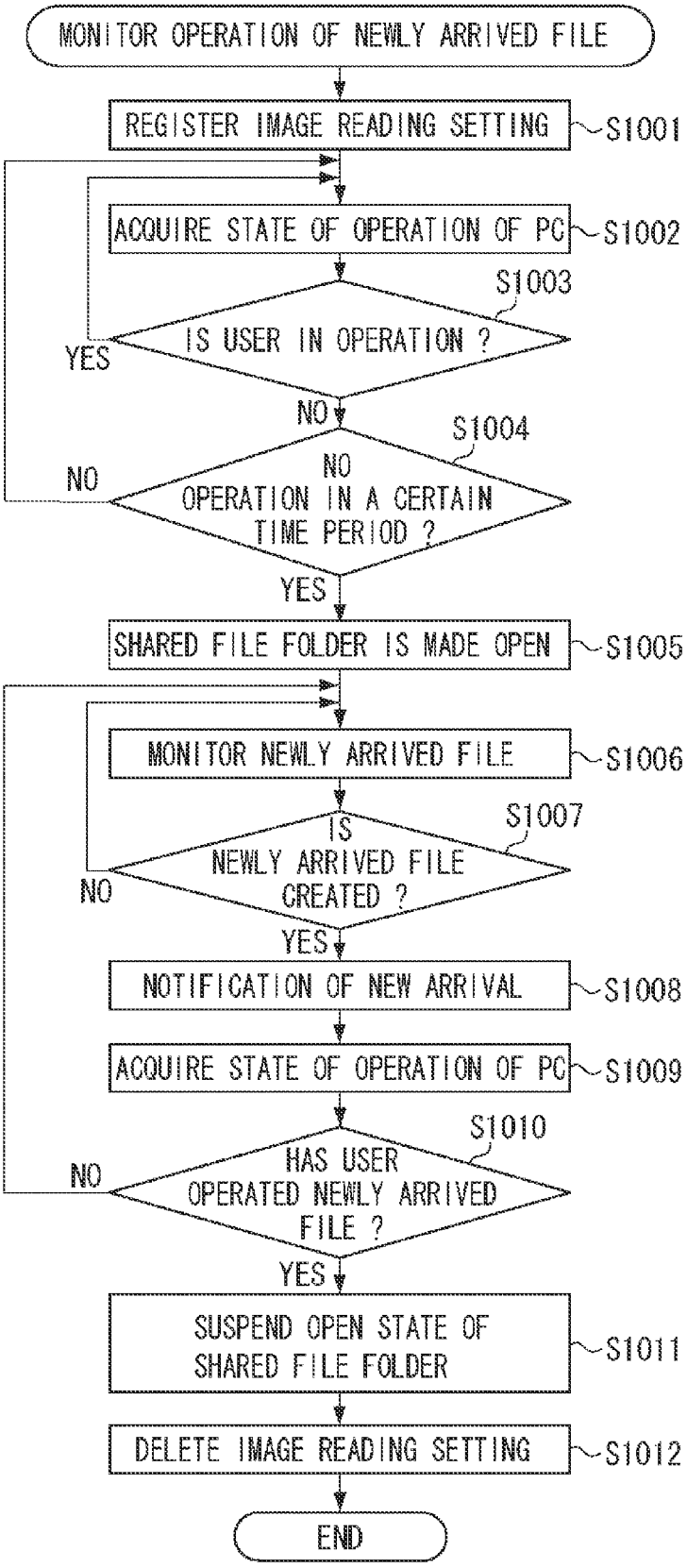

MONITOR OPERATION OF NEWLY ARRIVED FILE
REGISTER IMAGE READING SETTING
S1001
ACQUIRE STATE OF OPERATION OF PC
S1002
S1003
IS USER IN OPERATION ?
YES
NO
S1004
NO
NO
OPERATION IN A CERTAIN TIME PERIOD ?
YES
SHARED FILE FOLDER IS MADE OPEN
S1005
MONITOR NEWLY ARRIVED FILE
S1006
S1007
IS NEWLY ARRIVED FILE CREATED ?
NO
YES
NOTIFICATION OF NEW ARRIVAL
S1008
ACQUIRE STATE OF OPERATION OF PC
S1009
S1010
HAS USER OPERATED NEWLY ARRIVED FILE ?
NO
YES
SUSPEND OPEN STATE OF SHARED FILE FOLDER
S1011
DELETE IMAGE READING SETTING
S1012
END

FIG. 11

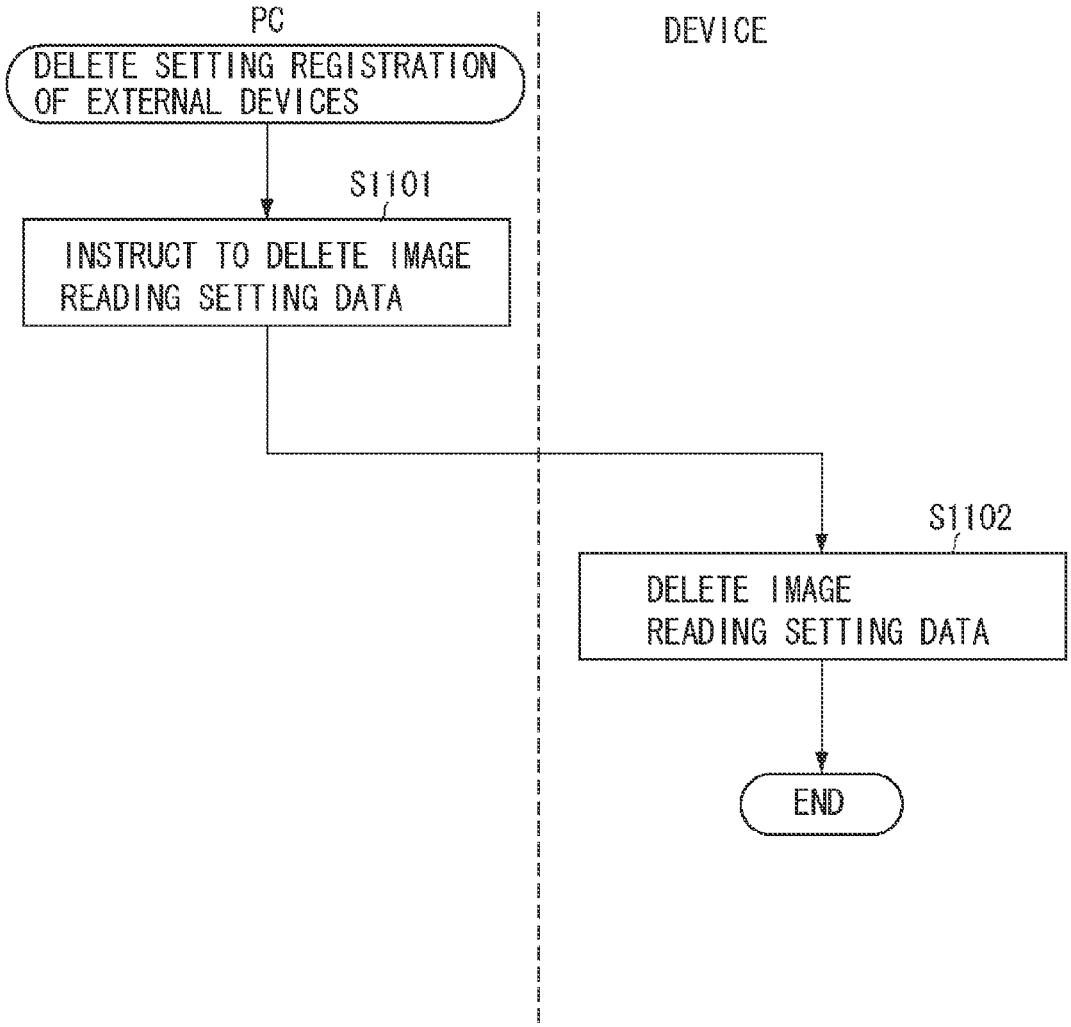
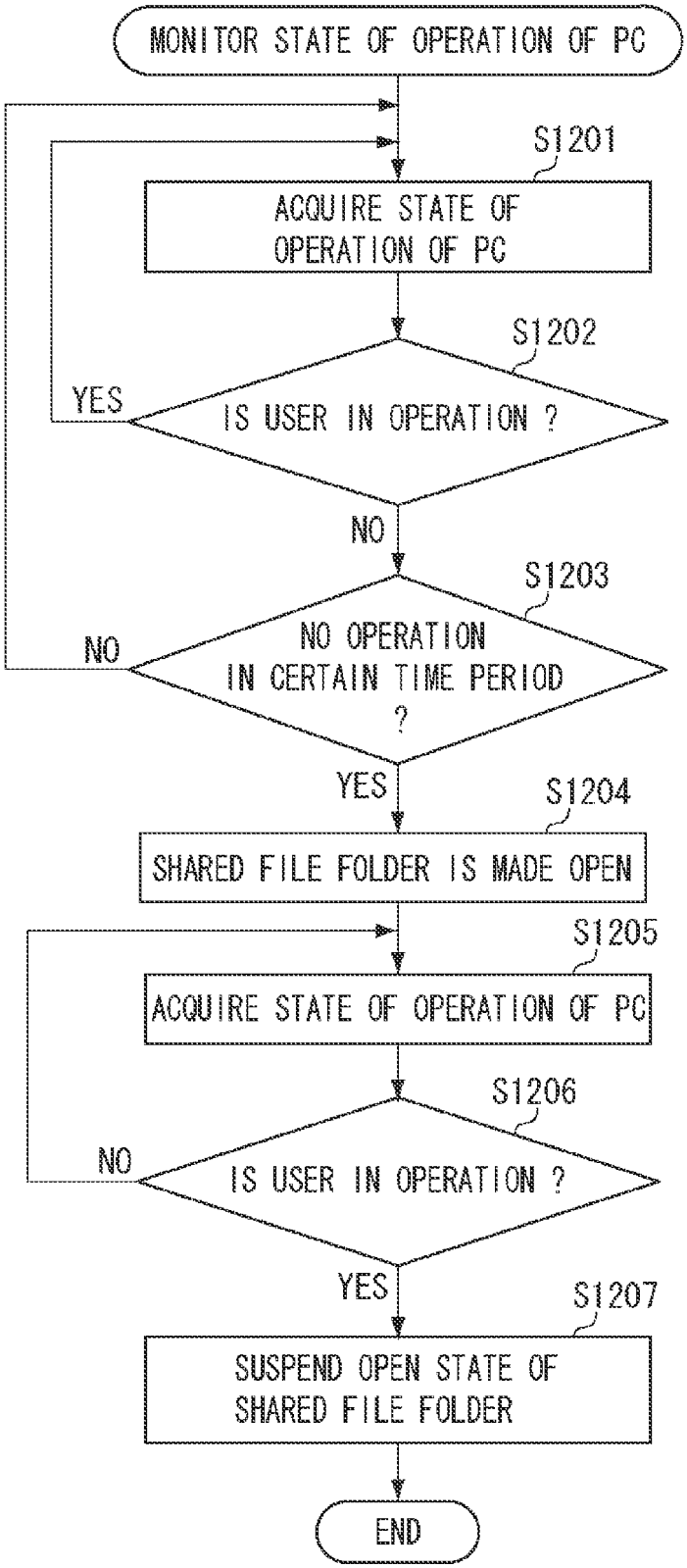

PC
DEVICE
DELETE SETTING REGISTRATION OF EXTERNAL DEVICES
S1101
INSTRUCT TO DELETE IMAGE READING SETTING DATA
S1102
DELETE IMAGE READING SETTING DATA
END

FIG. 12


MONITOR STATE OF OPERATION OF PC
S1201
ACQUIRE STATE OF OPERATION OF PC
S1202
IS USER IN OPERATION ?
YES
NO
S1203
NO OPERATION IN CERTAIN TIME PERIOD ?
NO
YES
S1204
SHARED FILE FOLDER IS MADE OPEN
S1205
ACQUIRE STATE OF OPERATION OF PC
S1206
IS USER IN OPERATION ?
NO
YES
S1207
SUSPEND OPEN STATE OF SHARED FILE FOLDER
END

INFORMATION PROCESSING APPARATUS AND CONTROL METHOD OF THE INFORMATION PROCESSING APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an information processing apparatus, a control method of the information processing apparatus and a computer program for the information processing apparatus. More specifically, the present invention relates to those which are suitable to be used in a the information processing apparatus which acquires an image data created by an image forming apparatus through a file sharing system.

2. Description of the Related Art

When a transmission of data is performed between information processing apparatus (hereinafter referred to as the "PC" or "PCs") which are connected to a network, a typically used is a file sharing protocol which is termed a server message block (SMB). In the file sharing system, a file stored within one's PC is placed in a state that the other PCs can access the file through a network and a plurality of users of the PCs can share the file through the network.

When a scanner or a multifunctional copying machine is used to read image data and thus read image data is stored in the PC, the file sharing system is also utilized. However, in this system, a PC of a data receiving side is required to wait for a connection from a PC of a data transmission source side, so that the file is frequently subjected to an unauthorized access. Namely, there is concern about security in the above system.

In view of the above, Japanese Patent Laid-open Publication No. 2000-267922 discusses a method of determining in advance a start time and an end time of data waiting in the PC of the data receiving side.

Alternatively, Japanese Patent Laid-open Publication No. 2003-316650 discusses another method of placing the PC of the data receiving side in a state of waiting for the data only when the PC of the data receiving side is connected to the network which is recognized as a safety network.

SUMMARY OF THE INVENTION

The present invention is directed to an information processing apparatus in which a waiting time of image data in the information processing apparatus can be adjusted, as much as possible, to a time period during which the information processing apparatus acquires the image data read by an image reading apparatus through a file sharing system.

According to an aspect of the present invention, an information processing apparatus connected by a network to an image reading apparatus which reads image data includes a storage unit configured to acquire the image data read by the image reading apparatus from the image reading apparatus and to store thus acquired image data in a storage area, a detection unit configured to detect a progress situation of processing in the image reading apparatus for reading the image data or an operation situation by a user with respect to the information processing apparatus and a control unit configured to control the information stored in the storage area to switch the information between an open state and a private state with respect to the external devices according to the detection result of the detection unit.

Further features and aspects of the present invention will become apparent from the following detailed description of exemplary embodiments with reference to the attached drawings, in which like reference characters designate the same or similar parts throughout the figures thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate exemplary embodiments, features, and aspects of the invention and, together with the description, serve to explain the principles of the invention.

FIG. **1** illustrates an example of a structure of an image reading system according to a first exemplary embodiment.

FIG. **2** illustrates an example of a structure of hardware of a personal computer (PC) according to the first exemplary embodiment.

FIG. **3** schematically illustrates an example of a structure of software of an operation system (OS) and an application program executed by the PC and an example of a structure of software executed by a device according to the first exemplary embodiment.

FIG. **4** is a flow chart illustrating an example of processing in an image reading system when the image reading system reads image data according to the first exemplary embodiment.

FIG. **5** illustrates an example of a graphical user interface (GUI) for an image reading setting according to the first exemplary embodiment.

FIG. **6** schematically illustrates an example of image reading setting data to be transmitted from the PC to and stored in the device according to the first exemplary embodiment.

FIG. **7** illustrates an example of the GUI which is displayed on a user interface of a device when a user logs in to the device according to the first exemplary embodiment.

FIG. **8** is a flow chart illustrating an example of processing of the image reading system when the image reading system controls an open state of a shared file folder on the PC according to the first exemplary embodiment.

FIG. **9** is a flow chart illustrating an example of processing of the image reading system when the image reading system controls the open state of the shared file folder on the PC based on a log-in state of the user with respect to the device according to a first modification of the first exemplary embodiment.

FIG. **10** is a flow chart illustrating an example of processing of the image reading system when the image reading system controls the open state of the shared file folder on the PC according to a second exemplary embodiment.

FIG. **11** is a flow chart illustrating in detail an example of processing of step **S1012** of FIG. **10** (processing when image reading setting data is deleted) according to the second exemplary embodiment.

FIG. **12** is a flow chart illustrating an example of processing of the image reading system when the image reading system controls the open state of the shared file folder on the PC based on only an operation state of the PC by the user according to a modification of the second exemplary embodiment.

DESCRIPTION OF THE EMBODIMENTS

Various exemplary embodiments, features, and aspects of the invention will be described in detail below with reference to the drawings.

In devices according to the conventional technique, a solution of common problems in the file sharing system is proposed, which narrows a possibility of unauthorized accesses.

An operation of reading the image data with an image reading apparatus such as a scanner or a multifunctional

copying machine and storing the image data in a personal computer (PC) is performed only when a user himself of the PC operates the image forming apparatus.

However, in the conventional technique, there is concern that the image reading apparatus can be placed in a waiting state in cases other than the above, so that, when the waiting state matches the standby condition, the image reading apparatus is frequently subjected to an unauthorized access. Therefore, the problem of security would not be resolved. For example, in the technique discussed in the above Japanese Patent Laid-open No. 2000-267922, the problem of the security would not be resolved depending on a time zone during which the access is allowed.

Therefore, the present invention is directed to an information processing apparatus in which a waiting time of image data in an information processing apparatus can be adjusted, as much as possible, to a time period during which the information processing apparatus acquires the image data read by the image reading apparatus through a file sharing system.

A first exemplary embodiment of the present invention is described below with reference to drawings attached hereto. FIG. **1** illustrates an example of a structure of an image reading system. In FIG. **1**, a PC **100** as an example of the information processing apparatus is connected to a device **101** as an example of the image reading apparatus to each other through a network **102**. Specific examples of the device **101** include a network scanner and a multifunctional copying machine.

FIG. **2** illustrates an example of a structure of hardware of the PC **100**. The structural diagram of the hardware of FIG. **2** corresponds to the structural diagram of hardware of a typical information processing apparatus, and thus the structure of the hardware of the typical information processing apparatus is applicable to the PC **100** of the present exemplary embodiment.

In FIG. **2**, a central processing unit (CPU) **200** executes a program stored in a program read only memory (ROM) of a ROM **202** or a program, such as an operating system (OS) or an application, loaded to a random access memory (RAM) **201** from an external memory **209**. The OS is executed on a computer and the operating system is referred to as the OS below. Processing in the below described each flow chart can be realized by executing the above program.

The RAM **201** works as a main memory of the CPU **200**, a work area or the like. A keyboard controller **203** controls a key input from a keyboard **207** or a not-shown pointing device. A display controller **204** controls a display of a display **208**. A disk controller **205** controls a data access to a hard disk (HD) **209**, a floppy disk (FD) or the like, each of which stores various data. A network controller (NC) **206** is connected to a network **102** to execute communication control processing with the other devices which are also connected to the network **102**.

FIG. **3** schematically illustrates an example of a structure of the OS **301** and software of an application program **302** which are executed by the PC **100** and an example of a structure of software which is executed by the device **101**.

In FIG. **3**, the OS **301** and the application program **302** run on the PC **100**. In FIG. **3**, only one application program **302** is illustrated; however, a plurality of application programs may run on the PC **100** in addition to the application program **302**. Also, the PC **100** is connected to the device **101** through the network **102** and thus can exchange data and acquire status of the data.

When image data is read by the device **101**, the device **101** initially registers an image reading setting based on an operation by a user. FIG. **4** is a flow chart illustrating an example of processing in the image reading system when the image reading system reads the image data.

The user starts a registration operation of the image reading setting by operating the keyboard **207** of the PC **100** or a not-shown pointing device. Then, the application program **302** displays on the display **208** an input GUI for the image reading setting (hereinafter referred to as the "image reading setting GUI"). FIG. **5** illustrates an example of the image reading setting GUI.

The user inputs to an image reading setting GUI **500** of FIG. **5** a registering destination device **501**, a log-in ID to the device (i.e., a device log-in ID) **502** and a device log-in password **503**. Further, the user inputs the following information as information to be displayed on a user interface **324** of the device **101**. In other words, the user inputs a setting registration name (i.e., a button name **504**) for the image reading setting, a folder (i.e., a transmission folder **505**) of the PC **100** in which the image data read by the device **101** is stored, a user ID (i.e., a destination user ID) of the PC **100** and a destination password **507**. When the user clicks an OK button **508**, a content input into the image reading setting GUI **500** becomes effective. On the other hand, when the user clicks a cancel button **509**, the content input into the image reading setting GUI **500** is cancelled (i.e., becomes invalid).

A storage module **312** for the transmission setting in FIG. **3** stores the setting input into the image reading setting GUI **500**, in an external memory **209** or the like such that the setting can be used repeatedly. In the present exemplary embodiment, for example, the storage module **312** stores the setting input into the image reading setting GUI **500**, so that an example of an identifier storage unit can be realized.

In step S**401**, a device registration module **310** of the transmission setting creates image reading setting data according to the setting input into the image reading setting GUI **500**.

In step S**402**, the device registration module **310** of the transmission setting transmits the image reading setting data to the device **101** shown in the registering destination device **501** through a network controller (NC) **206** and the network **102**. In the present exemplary embodiment, for example, the processing of step S**402** is performed to realize an example of an output unit.

A setting reception module **319** of the device **101** shown in the registering destination device **501** receives the image reading setting data transmitted from the PC **100** in step S**402**. Then, in step S**403**, a setting storage module **320** stores the image reading setting data in an external memory or the like within the device **101**.

FIG. **6** schematically illustrates an example of image reading setting data to be transmitted and stored in the device **101** from the PC **100**.

The PC **100**, which is a transmission source of image reading setting data **600**, sets itself as a sending destination **604** of the image reading setting data **600** and transmits the image reading stetting data **600**.

When a setting reception module **319** receives the image reading setting data, a setting storage module **320** assigns a button ID **601** which indicates an order to be displayed on the device **101**. Then, the setting storage module **320** assigns the content according to the image reading setting data having been received as items other than the button ID **601**. Accordingly, the image reading setting data **600** is stored in the device **101**.

When the user operates a user interface **324** of the device **101** to input the device log-in ID and the device log-in password, a log-in state management module **316** within a device status management unit **313** performs recognition processing of the user. Subsequently, the log-in state management mod-

ule **316** refers to the stored image reading setting data **600** and displays a setting which matches to the input device log-in ID on the user interface **324**.

FIG. **7** illustrates an example of the GUI displayed on the user interface **324** of the device **101** when the user logs in to the device **101**.

In the example of FIG. **7**, the setting registered in the device **101** according to the setting exemplified in FIG. **6** is displayed in the form of a button **701**. When the user selects the button **701**, the device **101** go into a state of an image reading setting. Thus, a setting execution module **321** within a transmission setting management unit **314** employs the stored setting (i.e., the image reading setting data **600**) as a current setting of the device **101**. Then, the user sets a document to be subjected to the reading processing of the image to the device **101** and instructs execution of scanning processing through the user interface **324**. Accordingly, an image input module **322** within a scan processing unit **315** generates image data of the document. Subsequently, an image transmission module **323** creates and transmits an image file according to the current setting of the device **101**.

Now, while referring to a flow chart of FIG. **8**, an example of processing of the image reading system when the image reading system controls an open state of the shared file folder **304** on the PC **100** is described below.

In step S**801**, the application program **302** acquires the transmission setting (i.e., a content of the setting input into the image reading setting GUI **500**) stored by the storage module **312** of the transmission setting according to the above described processing.

Then, in step S**802**, the device state monitoring module **309** acquires a state of the device **101** by using a device state detection service **306** of the OS **301**. The state of the device **101** is managed by a device status management module **317** within the device status management unit **313** and notified to the PC **100** by the device status notification module **318**. For example, when the device **101** is in a state of the image data reading setting, the device state monitoring module **309** acquires a content of the image reading setting data **600** from the device **101**.

As described above, in the present exemplary embodiment, the above described processing of step S**802** realizes an example of an acquirement unit.

In step S**803**, the operation detection module **311** of the application program **302** determines whether or not the image reading setting is currently applied to the device **101** based on the state of the device **101** acquired in step S**802**. As a result of the determination, if it is determined that the image reading setting is not currently applied to the device **101** (NO in step **803**), the processing returns to step S**802**.

On the other hand, if it is determined that the image reading setting is currently applied to the device **101** (YES in step S**803**), the processing goes to step S**804**. Then, the operation detection module **311** compares a setting registration name for the image reading setting contained in the transmission setting stored in the PC **100** (i.e., the content of the setting input into the image reading setting GUI **500**) with a setting registration name for the image reading setting currently applied to the device **101**. In step S**804**, the operation detection module **311** determines whether or not an image reading setting identical to the stored transmission setting is applied to the device **101**, based on the above comparison result. As a result of the determination, if the image reading setting identical to the stored transmission setting is not applied to the device **101** (NO in step S**804**), the processing returns to step S**802**.

As described above, in the present exemplary embodiment, the processing of the step S**804** realizes an example of a detection unit.

On the other hand, if the image reading setting identical to the stored transmission setting is applied to the device **101** (YES in step S**804**), the processing goes to step S**805**. The operation detection module **311** instructs the network file sharing service **305** of the OS **301** to change a sharing condition of the shared file folder **304** to "open" through a conjugated control module **308**. Accordingly, in step S**805**, the network file sharing service **305** changes the sharing condition of the shared file folder **304** to "open". As described above, since the sharing condition of the shared file folder **304** is opened, the network file sharing service **305** can receive image data from the device **101**, so that thus received image data can be stored in the shared file folder **304** as an example of a storage area.

As described above, in the present exemplary embodiment, the processing of step S**805** realizes an example of a switch control by a control unit. Also, for example, the network file sharing service **305** receives the image data from the device **101** to store the image data in the shared file folder **304** which is an example of the storage area, thereby realizing an example of a storage unit.

In step S**806**, the device state monitoring module **309** sequentially acquires the state of the device **101**. In step S**807**, the operation detection module **311**, then, determines whether the state of the device **101** is in the image reading setting or in the image reading, based on the state of the device **101** acquired in step S**806**. As a result of this determination, if it is determined that the state of the device **101** is in the middle of image reading setting or in the middle of image reading (YES in step S**807**), the processing returns to step S**806** to maintain the sharing condition of the shared file folder **304** in a state of "open".

On the other hand, if it is determined that the state of the device **101** is not either in the image reading setting or in the image reading (NO in step S**807**), the processing goes to step S**808**, recognizing that the reading of the image is paused or completed. Then, the operation detection module **311** instructs the network file sharing service **305** of the OS **301** to change the sharing condition of the shared file folder **304** to "private" through the conjugated control module **308**. Accordingly, in step S**808**, the network file sharing service **305** changes the sharing condition of the shared file folder **304** to "private".

As described above, in the present exemplary embodiment, the processing of step S**808** realizes an example of the switch control by a control unit. Further, for example, processing of steps S**804** and S**808** detect progress of the processing in the device **101** for reading the image data.

As described above, in the present exemplary embodiment, if it is determined that the device **101** is currently in a state of the image reading setting corresponding to the setting registration name which was set by the user to the PC **100** according to the user's registration operation of the image reading setting, the PC **100** changes the sharing condition of the shared file folder **304** to "open". Then, if it is determined that the device **101** is no longer in a state that the image reading setting is not applied or a state that the image reading is not currently performed, the PC changes the sharing condition of the shared file folder **304** to "private". Therefore, it becomes possible to change the sharing condition of the shared file folder **304** to "open" so as to coincide, as much as possible, with the time period (more preferably, limited only to the time period) during which the read image data is transmitted to the PC **100** after the device **101** started the reading operation.

Also, a waiting time of the file sharing in the PC **100** during the transfer of the image data from the device **101** can be shortened compared with the conventional technique.

In FIG. **3**, a new arrival monitoring module **307** is used in a below described second exemplary embodiment, so that the module **307** is not required in the present exemplary embodiment.

A first modification is described below. In the flow chart of FIG. **8**, a case of changing the sharing condition of the shared file folder **304**, based on a comparison result between the name of the image reading setting included in the state of the device **101** and the name of the transmission setting stored in the PC **100**, was described as an example. However, depending on abilities of the device **101** and the device state detection service **306**, the state of the device **101** that the PC **100** can acquire may be limited. In such a case, for example, the sharing condition of the shared file folder **304** can be changed based on the logging-in state of the user to the device **101**.

An example of the processing of the image reading system when the image reading system controls the opened state of the shared file folder **304** on the PC **100** is described below based on the logging-in state of the user to the device **101** with reference to a flow chart of FIG. **9**.

In step S**901**, the application program **302** acquires an identifier of the user (i.e., the device log-in ID **502**) from the transmission setting stored in the storage module **312** of the transmission setting according to the above described processing.

Subsequently, in step S**902**, the device state monitoring module **309** uses the device state detection service **306** of the OS **301** to acquire the state of the device **101**.

As described above, in the present exemplary embodiment, the processing of step S**902** realizes an example of an acquirement unit.

The operation detection module **311** of the application program **302** extracts the logging-in state of the user to the device **101** based on the state of the device acquired in step S**902**. Then, the operation detection module **311** determines whether or not the device log-in ID identified from the extracted log-in state is identical to the device log-in ID **502** acquired in step S**901**. In other words, in step S**903**, the operation detection module **311** determines whether or not the user who matches the user of the device log-in ID **502** acquired in step S**901** is currently logging-in to the device **101**. As a result of the determination, if it is determined that the user, who matches the user of the device log-in ID **502** acquired in step S**901**, is not logging-in to the device **101** (NO in step S**903**), the processing returns to step S**902**.

As described above, in the present exemplary embodiment, the processing of step S**903** realizes an example of a detection unit.

On the other hand, if the user identical to the user of the device log-in ID **502** acquired in step S**901** is logging-in to the device **101** (YES in step S**903**), the processing goes to step S**904**. Then, the operation detection module **311** instructs the network file sharing service **305** of the OS **301** to change the sharing condition of the shared file folder **304** to "open" through the conjugated control module **308**. Accordingly, in step S**904**, the network file sharing service **305** changes the sharing condition of the shared file folder **304** to "open". As described above, when the sharing condition of the shared file folder **304** is made "open", the network file sharing service **305** can receive the image data from the device **101** to store the image data in the shared file folder **304**.

As described above, in the present exemplary embodiment, the processing of step S**904** realizes an example of the switch control by a control unit. Further, the network file sharing service **305** receives the image data from the device **101** to store the image data in the shared file folder **304** as an example of a storage area, thereby realizing an example of a storage unit.

In step S**905**, the device state monitoring module **309** continues to acquire the state of the device **101**.

As described above, in the present exemplary embodiment, the processing of step S**905** realizes an example of an acquisition unit.

In step S**906**, the operation detection module **311** determines whether or not the user identical to the user of the device log-in ID **502** obtained in step S**901** is logging-in to the device **101**, based on the state of the device **101** acquired in step S**905**. As a result of the determination, if it is determined that the user identical to the user of the device log-in ID **502** acquired in step S**901** is in a state of logging-in to the device **101** (Yes in step S**906**), the processing returns to step S**905** and maintains the sharing condition of the shared file folder **304** in the state of "open".

As described above, in the present exemplary embodiment, the processing of step S**906** realizes an example of a detection unit. Further, the processing of steps S**903** and S**906** enables detection of the progress of the processing for reading the image data in the device **101**.

On the other hand, if the user identical to the user of the device log-in ID **502** acquired in step S**901** is not in a state of logging-in to the device **101** but in a state of logging-out from the device **101** (NO in step S**906**), the processing goes to step S**907**. Then, the operation detection module **311** instructs the network file sharing service **305** of the OS **301** to change the sharing condition of the shared file folder **304** to "private" through the conjugated control module **308**. Accordingly, in step S**907**, the network file sharing service **305** changes the sharing condition of the shared file folder **304** to "private".

As described above, in the present exemplary embodiment, the processing of step S**907** realizes an example of a control unit.

An example of a second modification is described below. In contrast to the first modification, there is a case that the more detailed state of the device **101** can be acquired depending on the abilities of the device **101** and the device state detection service **306**. In this case, for example, when the PC **100** detects the state that the user sets the document to be read, to the device **101**, the sharing condition of the shared file folder **304** can be changed to "open". Then, when the PC **100** detects the state that the user removes the document to be read, from the device **101**, the sharing condition of the shared file folder **304** can be changed to "private".

Now, the second exemplary embodiment of the present invention is described below. In the above described first exemplary embodiment, the sharing condition of the shared file folder **304** is changed based on the result of the comparison between the state of the device **101** and the transmission setting stored in the PC **100**. However, there is a case that the state of the device cannot be acquired depending on the abilities of the device **101** and the device state detection service **306**. In the present exemplary embodiment, a case is described in which a sharing condition of the shared file folder **304** is changed based on an operation state of the PC **100** by the user. As described above, the present exemplary embodiment differs from the first exemplary embodiment in a determination method when the sharing condition of the shared file folder **304** is changed. On the other hand, a system structure, a hardware structure and a software structure of the present exemplary embodiment are identical to those of the first exemplary embodiment (see FIGS. **1** through **3**; however, the new arrival monitoring module **307** of FIG. **3** is added to

the present exemplary embodiment). Therefore, in the description of the present exemplary embodiment, portions different from those in the above described first exemplary embodiment are denoted by the same numbers and/or symbols which are used in FIG. **1** through **9** and therefore detailed description of the portions are omitted.

An example of the processing of the image reading system when the image reading system controls the opened state of the shared file folder **304** on the PC **100** is described below with reference to a flow chart of FIG. **10**.

In step **1001**, the application program **302** of the PC **100** performs the image reading setting based on the registration operation of the image reading setting by the user and registers the image reading setting data in the device **101** through the NC **206** and the network **102**. The processing of step S**1001** can be realized by, for example, the one identical to the processing of FIG. **4**.

In step S**1002**, the operation detection module **311** of the application program **302** acquires the operation state of the PC **100** performed by the user.

In step S**1003**, the operation detection module **311** determines whether or not the user is continuing the operation of the PC **100**. If it is determined that the user is continuing the operation of the PC **100** (YES in step S**1003**), the processing returns to step S**1002**.

On the other hand, if it is determined that the user is not continuing the operation of the PC **100** (NO in step S**1003**), the processing goes to step S**1004**. In step S**1004**, the operation detection module **311** determines whether or not the user stops the operation of the PC **100** for the predetermined time period. If the operation detection module **311** determines that no operation has been performed by the user with respect to the PC **100** for the predetermined time period (NO in step S**1004**), the processing returns to step S**1002**.

As described above, in the present exemplary embodiment, the processing of step S**1004** realizes an example of a detection unit.

On the other hand, if the operation detection module **311** determines that no operation of the PC **100** has been performed by the user for the predetermined time period (YES in step S**1004**), the processing goes to step S**1005**. Then, the operation detection module **311** instructs the network file sharing service **305** of the OS **301** to change the sharing condition of the shared file folder **304** to "open" through the conjugated control module **308**. Accordingly, in step S**1005**, the network file sharing service **305** changes the sharing condition of the shared file folder **304** to "open". If the user performs an end operation of the application program **302** itself and thereby the processing of the application program **302** is ended, no processing is considered to have been performed with respect to the application program **302** (for the predetermined time period). Subsequently, the sharing condition of the shared file folder **304** is changed to "open".

As described above, in the present exemplary embodiment, the processing of step S**1005** realizes an example of a switch control by a control unit.

Then, in step S**1006**, the new arrival monitoring module **307** of the application program **302** monitors the shared file folder **304** on the file system **303** of the PC **100**.

Subsequently, in step S**1007**, the new arrival monitoring module **307** determines whether or not an image file (i.e., a newly arrived file) is created within the shared file folder **304**. If it is determined that no image file is created in the shared file folder **304** (NO in step S**1007**), the processing returns to step S**1006**.

As described above, in the present exemplary embodiment, by the creation of the image file (i.e., the newly arrived file) within the shared file folder **304** as the storage area, an example of a storage unit is realized.

On the other hand, if it is determined that an image file is created in the shared file folder **304** (YES in step S**1007**), the processing goes to step S**1008**. In step S**1008**, the application program **302**, then, displays a GUI a notifying a newly arrived read image on the display **208**. The GUI indicating a newly arrived read image notifies the user that the image data acquired by reading a document, which the user sets on the device **101**, is captured in the shared file folder **304** of the PC **100**.

In step S**1009**, the operation detection module **311** subsequently acquires the operation state of the PC **100** performed by the user. Then, in step S**1010**, the operation detection module **311** determines whether or not the user performed any operation, such as a display or a movement of a newly arrived file, with respect to the newly arrived file. If the operation detection module **311** determines that the user has not made any operation with respect to the newly arrived file (NO in step S**1010**), the processing returns to step S**1006**.

As described above, in the present exemplary embodiment, the processing of step S**1009** realizes an example of a detection unit.

On the other hand, if the operation detection module **311** determines that the user has made some operation with respect to the newly arrived file (YES in step S**1010**), the processing goes to step S**1011**. Then, the operation detection module **311** instructs the network file sharing service **305** of the OS **301** to change the sharing condition of the shared file folder **304** to "private" through the conjugated control module **308**. Accordingly, in step S**1011**, the network file sharing service **305** changes the sharing condition of the shared file folder **304** to "private".

As described above, in the present exemplary embodiment, the processing of step S**1011** realizes an example of a switch control by a control unit.

Then, the device registration module **310** of the transmission setting instructs the device **101**, as the registering destination device **501** input into the image reading setting GUI **500**, to delete a target image reading setting data **600**, through the NC **206** and the network **102**. Accordingly, in step S**1012**, the device **101** deletes the image reading setting data **600**.

FIG. **11** is a flow chart illustrating in detail an example of the processing of step S**1012** of FIG. **10** (i.e., the processing of deleting the image reading setting data **600**).

In FIG. **11**, the device registration module **310** of the transmission setting of the application program **302** acquires a setting registration name input in the button name **504** from the image reading setting stored in the storage module **312** for storing the transmission setting. Then, in step S**1101**, the device registration module **310** of the transmission setting transmits a setting deletion notification which designates thus acquired setting registration name to the device **101** shown in the registering destination device **501** through the NC **206** and the network **102**.

As described above, in the present exemplary embodiment, the processing of step S**1101** realizes an example of a request unit.

The setting reception module **319** within the transmission setting management unit **314** of the device **101** as shown in the registering destination device **501** receives the setting deletion notification transmitted in step S**1101**. Then, in step S**1102**, the setting storage module **320** deletes the image reading setting data **600** stored in the device **101**.

As described above, in the present exemplary embodiment, if it is determined that no operation has been performed by the user for the predetermined time period with respect to the PC

100 after the image reading setting data 600 is registered in the device 101, the PC 100 changes the sharing condition of the shared file folder 304 to "open". Subsequently, if it is determined that an operation is performed by the user with respect to an image file newly created in the shared file folder 304, the PC 100 changes the sharing condition of the shared file folder 304 to "private". Then, the PC 100 deletes the image reading setting data 600 of the device 101.

Consequently, even when the PC 100 cannot acquire the state of the device 101 due to the abilities of the device 101 and the device state determination service 306, an effect similar to the effect produced by the above described first exemplary embodiment can be produced. In other words, after the device 101 starts the image reading operation, the device 101 can change the sharing condition of the shared file folder 304 to "open", which is adjusted, as much as possible, to the time period during which the device 101 transfers thus read image data to the PC 100.

A modification of the present exemplary embodiment is described below. In the flow chart of FIG. 10, as an example, the registration or the deletion of the image reading setting data 600 is performed with respect to the device 101 at the beginning or at the end of the image reading operation. However, there may be a case that the device 101 cannot store the image reading setting data 600 depending on a function of the device 101. In such a case, the sharing condition of the shared file folder 304 can be changed based only on the operation state of the PC 100 by the user.

An example of the process of the image reading system will be described when the image reading system controls the open state of the shared file folder 304 on the PC 100 based only on the operation state of the PC 100 performed by the user with reference to a flow chart of FIG. 12.

In step S1201, the operation detection module 311 of the application program 302 acquires the operation state of the PC 100 performed by the user.

In step S1202, the operation detection module 311 determines whether or not the user is continuing the operation of the PC 100. If it is determined that the user is continuing the operation of the PC 100 (YES in step S1202), the processing returns to step S1201.

On the other hand, if it is determined that the user is not continuing the operation of the PC 100 (NO in step S1202), the processing goes to step S1203. Then, in step S1203, the operation detection module 311 determines whether or not the operation of the PC 100 by the user has not been performed for the predetermined time period. If the operation detection module 311 determines that the operation of the PC 100 by the user has been continuously performed for the predetermined time period (NO in step S1203), the processing returns to step S1201.

As described above, in the present exemplary embodiment, the processing of the step S1203 realizes an example of a detection unit.

On the other hand, if the operation detection module 311 determines that the operation of the PC 100 by the user has not been performed for the predetermined time period (NO in step S1206), the processing goes to step S1204. Then, the operation detection module 311 instructs the network file sharing service 305 of the OS 301 to change the sharing condition of the shared file folder 304 to "open" through the conjugated control module 308. Accordingly, in step S1204, the network file sharing service 305 changes the sharing condition of the shared file folder 304 to "open". As described above, the sharing condition of the shared file folder 304 is made "open". As a result, the network file sharing service 305 can receive the image data from the device 101 to store thus received image data in the shared file folder 304.

As described above, in the present exemplary embodiment, the processing of step S1204 realizes an example of a switch control by a control unit. Further, an example of the storage unit can be realized by the network file sharing service 305 receiving the image data from the device 101 to store thus received image data in the shared file folder 304 serving as a storage area.

In step S1205, the operation detection module 311 of the application program 302 acquires the operation state of the PC 100 performed by the user. Then, in step S1206, the operation detection module 311 determines whether or not there was the operation of the PC 100 by the user. In this step S1206, in addition to a method for determining whether or not there was any operation by the user with respect to the PC 100, it may be determined whether or not the user made the operation with respect to the newly arrived file of the shared file folder 304, similar to step S1010 of FIG. 10.

As described above, in the present exemplary embodiment, the processing of step S1206 realizes an example of a detection unit.

As a result of the determination of step S1206, if it is determined that there is no operation of the PC 100 performed by the user (NO in step S1206), the processing returns to step S1205. On the other hand, if it is determined that there was the operation of the PC 100 by the user, the processing goes to step S1207. Then, the operation detection module 311 instructs the network file sharing service 305 of the OS 301 to change the sharing condition of the shared file folder 304 to "private" through the conjugated control module 308. Accordingly, in step S1207, the network file sharing service 305 changes the sharing condition of the shared file folder 304 to "private".

As described above, in the present exemplary embodiment, the processing of step S1207 realizes an example of a control unit.

Each of the above described exemplary embodiments shows mere examples in carrying out the present invention, and thus the technical scope of the present invention should not be unduly restricted in interpretation of the present invention. More specifically, the present invention can be carried out in various ways without departing from the spirit of the invention.

Other Embodiments

Aspects of the present invention can also be realized by a computer of a system or apparatus (or devices such as a CPU or MPU) that reads out and executes a program recorded on a memory device to perform the functions of the above-described embodiment(s), and by a method, the steps of which are performed by a computer of a system or apparatus by, for example, reading out and executing a program recorded on a memory device to perform the functions of the above-described embodiment(s). For this purpose, the program is provided to the computer for example via a network or from a recording medium of various types serving as the memory device (e.g., computer-readable medium).

While the present invention has been described with reference to exemplary embodiments, it is to be understood that the invention is not limited to the disclosed exemplary embodiments. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all modifications, equivalent structures, and functions.

This application claims priority from Japanese Patent Application No. 2009-060127 filed Mar. 12, 2009, which is hereby incorporated by reference herein in its entirety.

What is claimed is:

1. An information processing apparatus connected by a network to an image reading apparatus which reads image data, the information processing apparatus comprising:

an acquisition unit configured to acquire a state of the image reading apparatus from the image reading apparatus via the network;

a detection unit configured to determine, based on the state of the image reading apparatus acquired from the image reading apparatus by the acquisition unit, whether or not a pre-stored image reading setting is currently applied to the image reading apparatus, wherein the pre-stored image reading setting indicates a shared folder of the information processing apparatus as a transmission destination; and

a control unit configured to automatically change a sharing condition of the shared folder of the information processing apparatus to an open state when the detection unit determines that the pre-stored image reading setting is currently applied to the image reading apparatus, and configured to automatically change the sharing condition of the shared folder of the information processing apparatus to a private state when the detection unit determines that the pre-stored image reading setting is not currently applied to the image reading apparatus,

wherein, when the control unit determines that the state of the image reading apparatus is in the middle of an image reading setting or in the middle of image reading, the sharing condition of the shared folder of the information processing apparatus remains in the open state.

2. The information processing apparatus according to claim **1**, further comprising:

a registration unit configured to create the pre-stored image reading setting, and to transmit the created image reading setting to the image reading apparatus, wherein the image reading apparatus stores the transmitted image reading setting.

3. An information processing apparatus connected by a network to an image reading apparatus which reads image data, the information processing apparatus comprising:

an acquisition unit configured to acquire a state of the image reading apparatus from the image reading apparatus via the network;

a detection unit configured to determine, based on the state of the image reading apparatus acquired from the image reading apparatus by the acquisition unit, whether or not a log-in user who logs in to the image reading apparatus is identical to a user information included in a pre-stored image reading setting, wherein the pre-stored image reading setting indicates a shared folder of the information processing apparatus as a transmission destination; and

a control unit configured to automatically change a sharing condition of the shared folder of the information processing apparatus to open state when the detection unit determines that the log-in user is identical to the user information included in the pre-stored image reading setting, and configured to automatically change the sharing condition of the shared folder of the information processing apparatus to a private state when the detection unit determines that the log-in user is not identical to the user information included in the pre-stored image reading setting,

wherein, when the control unit determines that the state of the image reading apparatus is in the middle of an image reading setting or in the middle of image reading, the sharing condition of the shared folder of the information processing apparatus remains in the open state.

4. A control method of an information processing apparatus which is connected to the image reading apparatus for reading image data to each other through a network, the control method comprising the steps of:

acquiring a state of the image reading apparatus from the image reading apparatus via the network;

determining, based on the state of the image reading apparatus acquired from the image reading apparatus in the acquiring step, whether or not a pre-stored image reading setting is currently applied to the image reading apparatus, wherein the pre-stored image reading setting indicates a shared folder of the information processing apparatus as a transmission destination;

controlling to automatically change a sharing condition of the shared folder of the information processing apparatus to an open state when it is determined in the determining step that the pre-stored image reading setting is currently applied to the image reading apparatus; and

controlling to automatically change the sharing condition of the shared folder of the information processing apparatus to a private state when it is determined in the determining step that the pre-stored image reading setting is not currently applied to the image reading apparatus,

controlling, the sharing condition of the shared folder of the image processing apparatus to remain in the open state when it is determined that the state of the image reading apparatus is in the middle of an image reading setting or in the middle of image reading.

5. A non-transitory computer readable storage medium which stores a program for causing a computer to execute the control method according to claim **4**.

6. A control method of an information processing apparatus which is connected to the image reading apparatus for reading image data to each other through a network, the control method comprising the steps of:

acquiring a state of the image reading apparatus from the image reading apparatus via the network;

determining, based on the state of the image reading apparatus acquired from the image reading apparatus in the acquisition step, whether or not a log-in user who logs in to the image reading apparatus is identical to a user information included in a pre-stored image reading setting, wherein the pre-stored image reading setting indicates a shared folder of the information processing apparatus as a transmission destination;

controlling to automatically change a sharing condition of the shared folder of the information processing apparatus to open state when it is determined in the determining step that the log-in user is identical to the user information included in the pre-stored image reading setting, and

controlling to automatically change the sharing condition of the shared folder of the information processing apparatus to a private state when it is determined in the determining step that the log-in user is not identical to the user information included in the pre-stored image reading setting,

controlling, the sharing condition of the shared folder of the image processing apparatus to remain in the open state when it is determined that the state of the image

reading apparatus is in the middle of an image reading setting or in the middle of image reading.

7. A non-transitory computer readable storage medium which stores a program for causing a computer to execute the control method according to claim **6**.

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